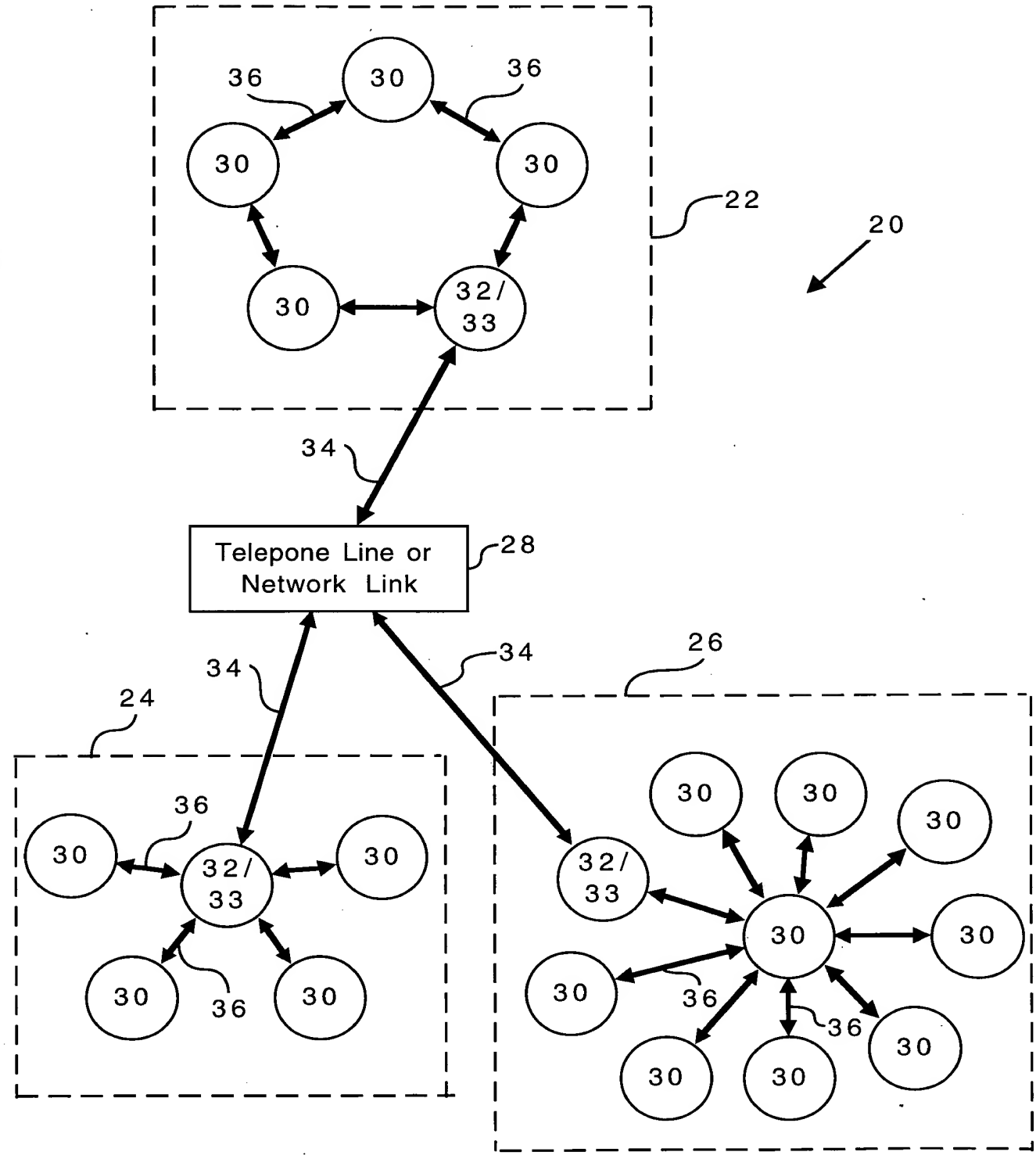

Fig. 1 (Prior Art)

APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS
SUBCLASS

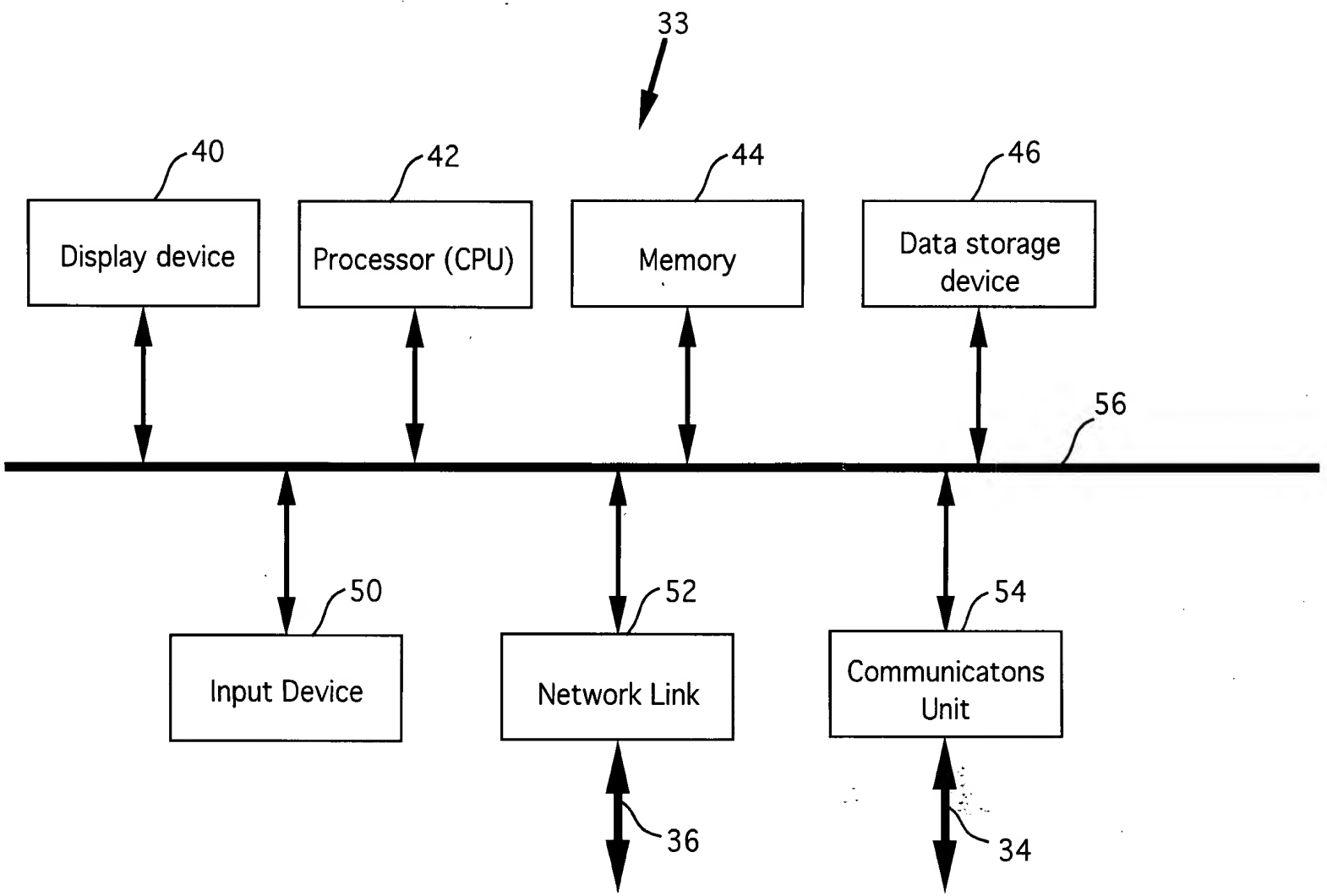

Fig. 2

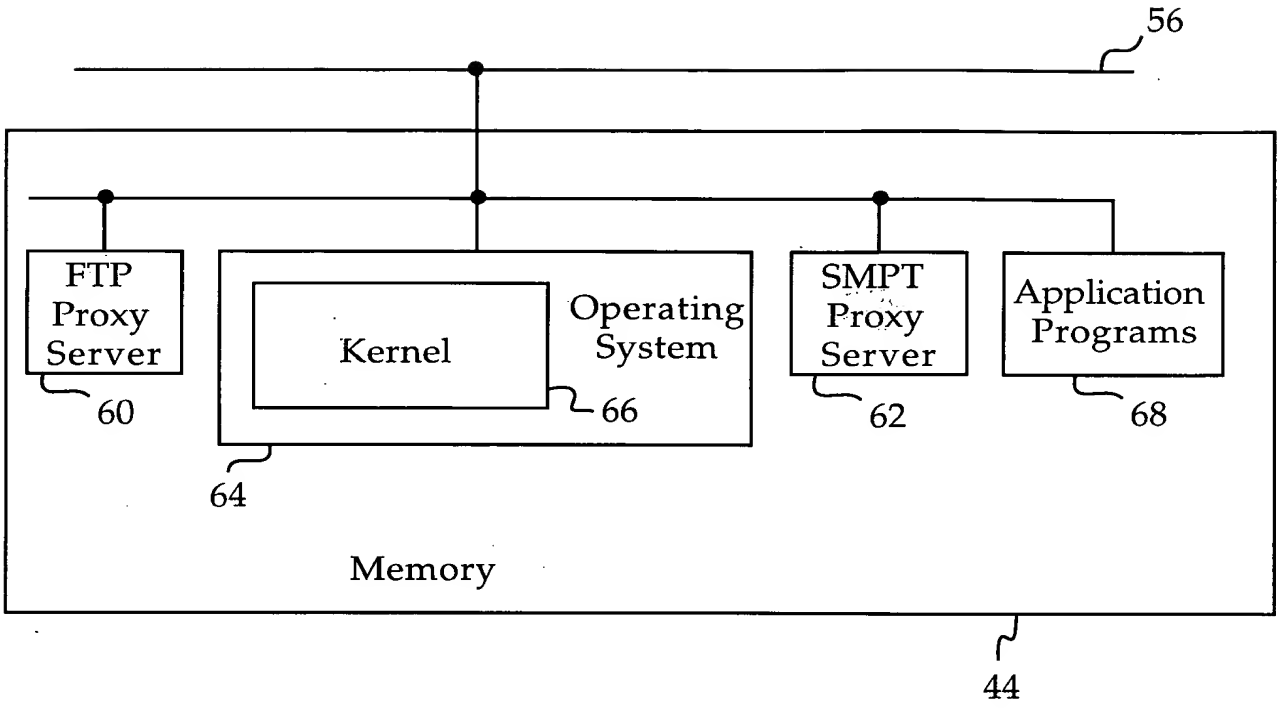
56
FTP
Proxy
Server
60
Kernel
Operating
System
66
64
SMPT
Proxy
Server
62
Application
Programs
68
Memory
44

FIG. 3

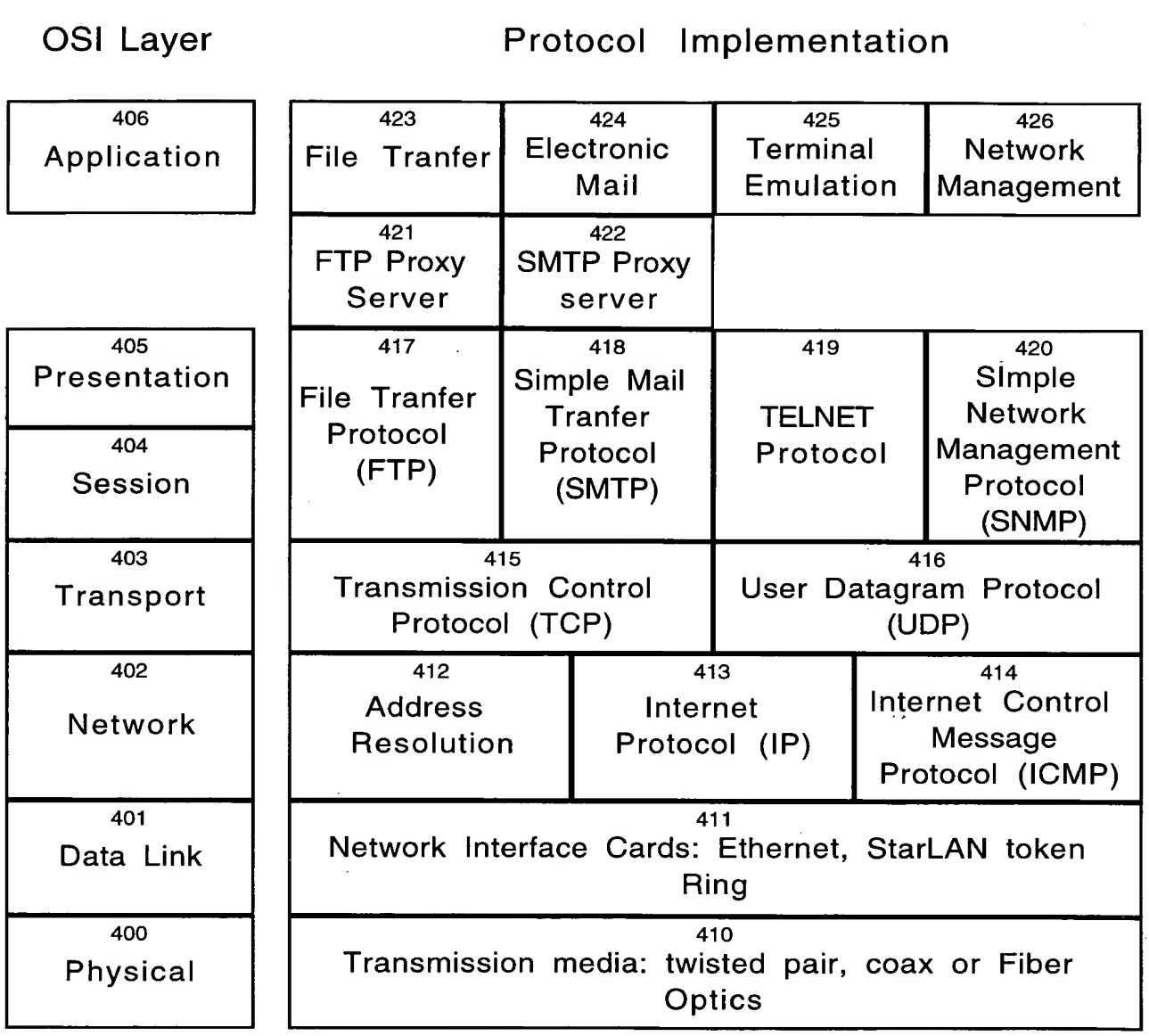
OSI Layer
Protocol Implementation
406
Application
405
Presentation
404
Session
403
Transport
402
Network
401
Data Link
400
Physical
423
File Tranfer
424
Electronic Mail
425
Terminal Emulation
426
Network Management
421
FTP Proxy Server
422
SMTP Proxy server
417
File Tranfer Protocol (FTP)
418
Simple Mail Tranfer Protocol (SMTP)
419
TELNET Protocol
420
SImple Network Management Protocol (SNMP)
415
Transmission Control Protocol (TCP)
416
User Datagram Protocol (UDP)
412
Address Resolution
413
Internet Protocol (IP)
414
Internet Control Message Protocol (ICMP)
411
Network Interface Cards: Ethernet, StarLAN token Ring
410
Transmission media: twisted pair, coax or Fiber Optics

FIG. 4

APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS
SUBCLASS

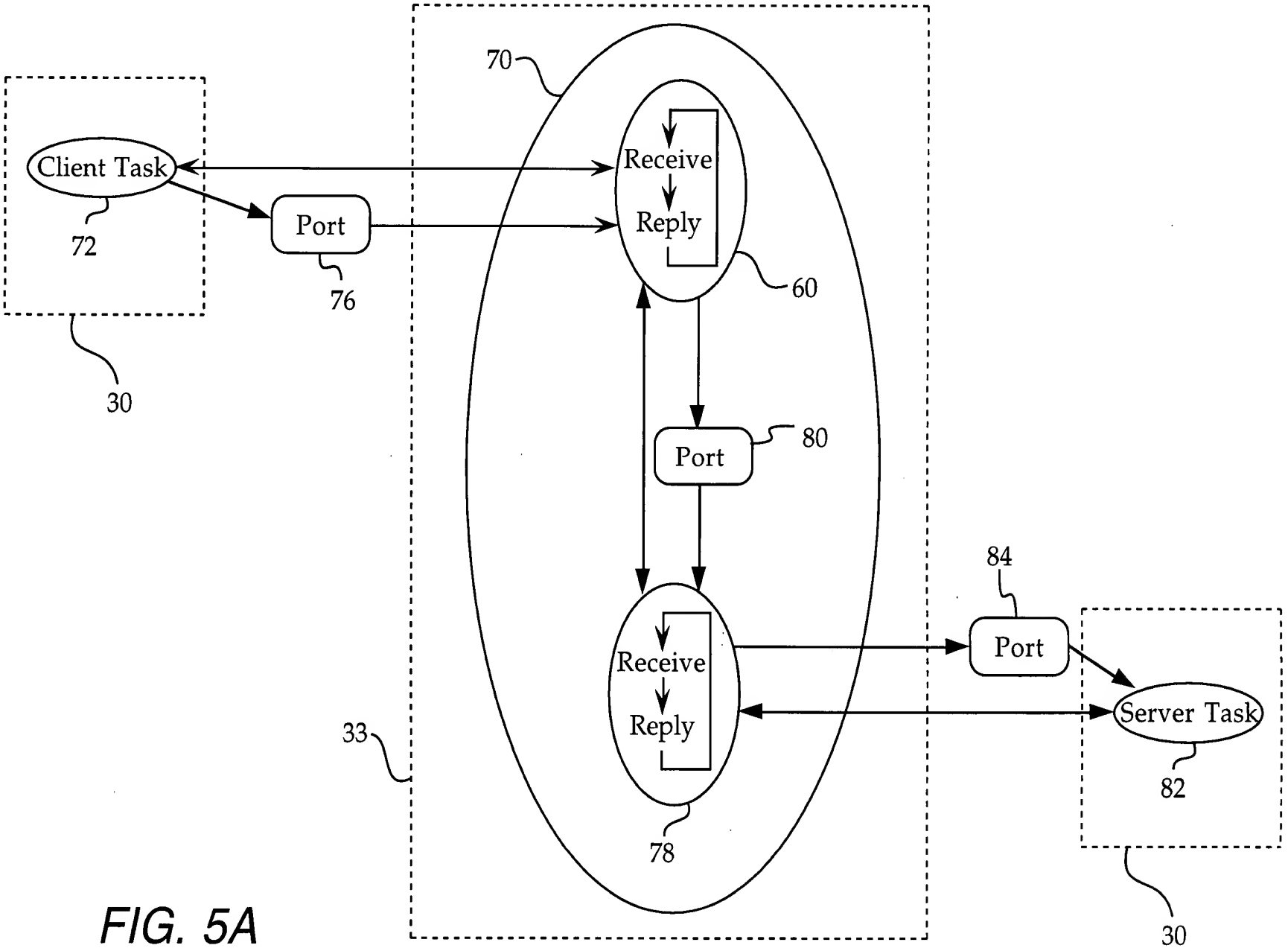

FIG. 5A

APPROVED BY DRAFTSMAN | O.G. FIG. | CLASS | SUBCLASS

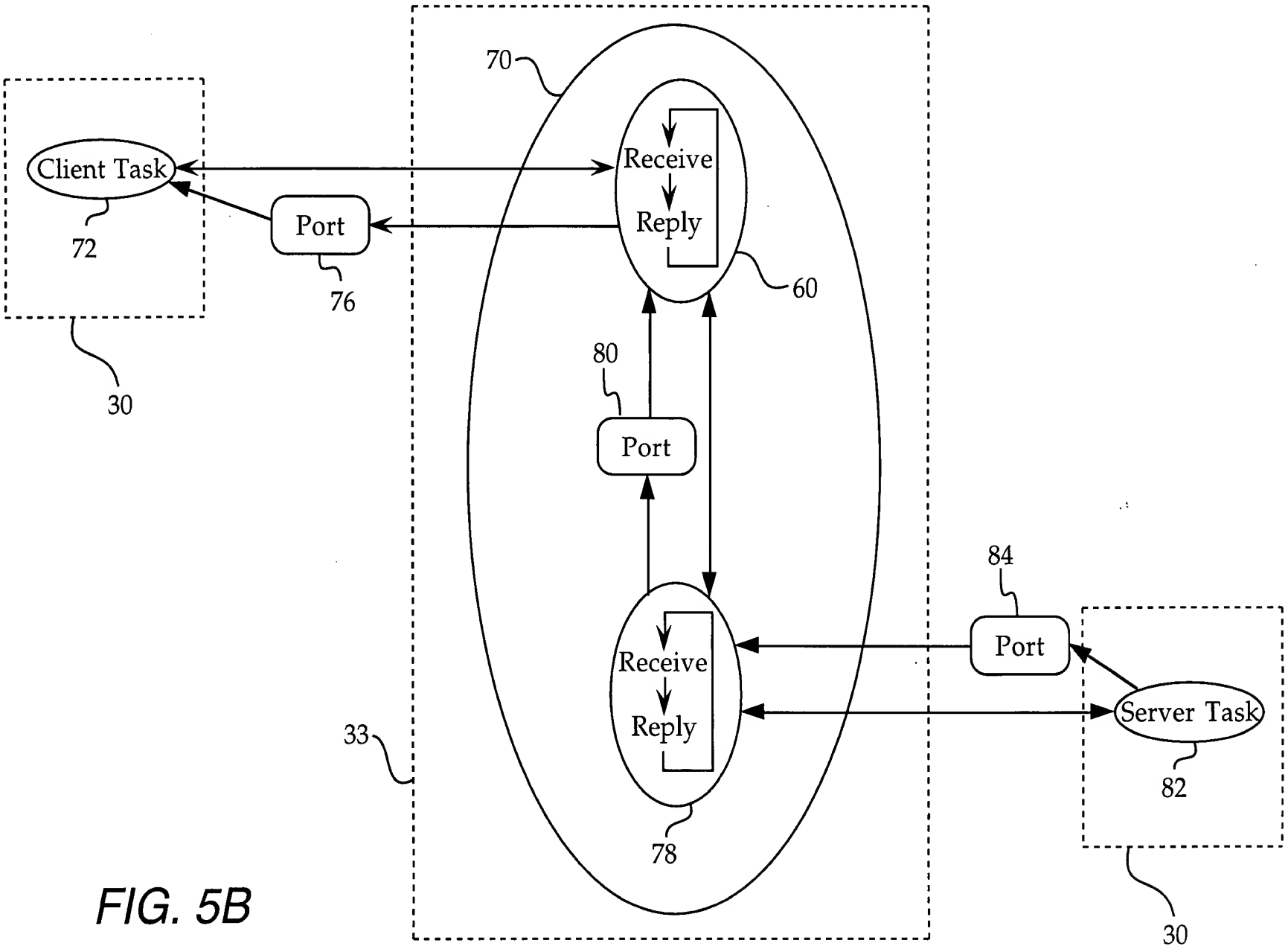

FIG. 5B

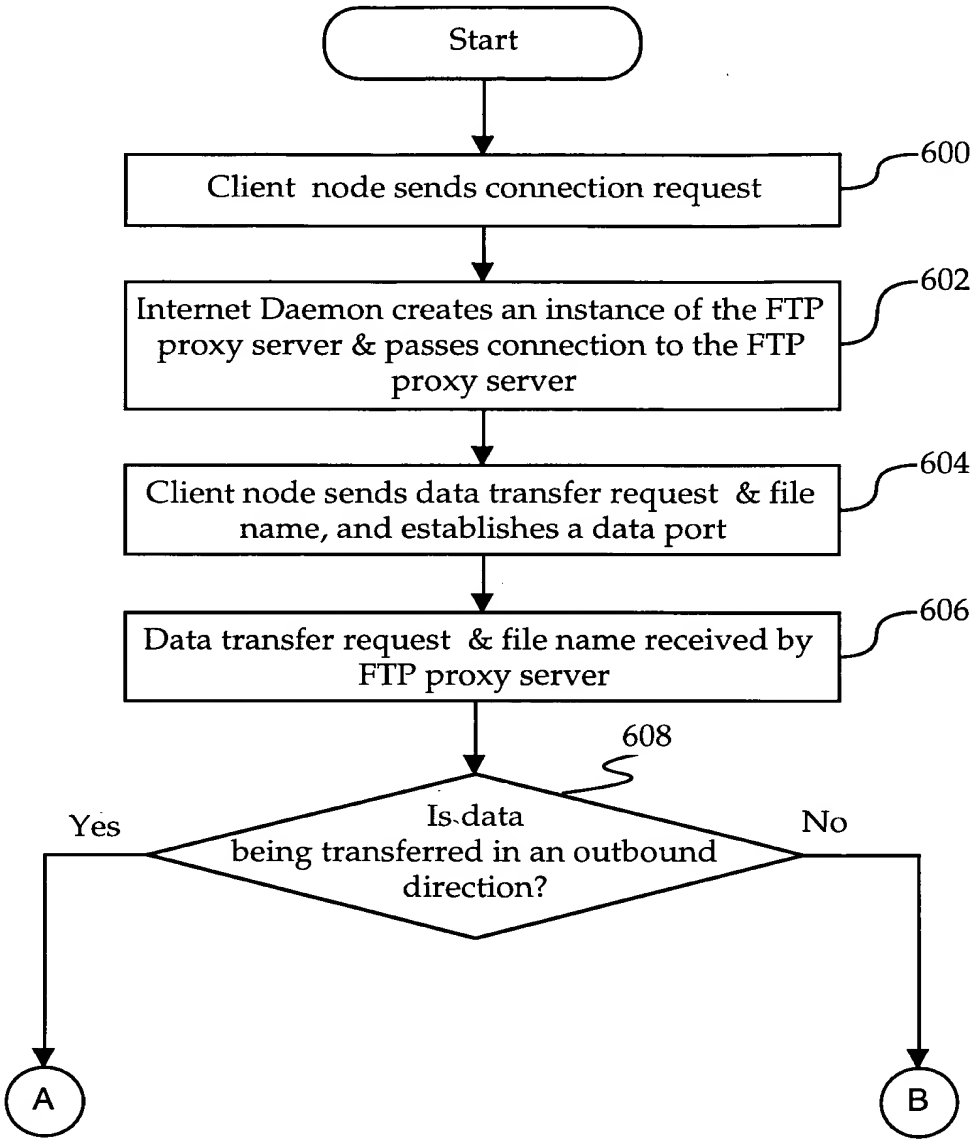
Start
Client node sends connection request
600
Internet Daemon creates an instance of the FTP proxy server & passes connection to the FTP proxy server
602
Client node sends data transfer request & file name, and establishes a data port
604
Data transfer request & file name received by FTP proxy server
606
608
Is data being transferred in an outbound direction?
Yes
No
A
B

FIG. 6A

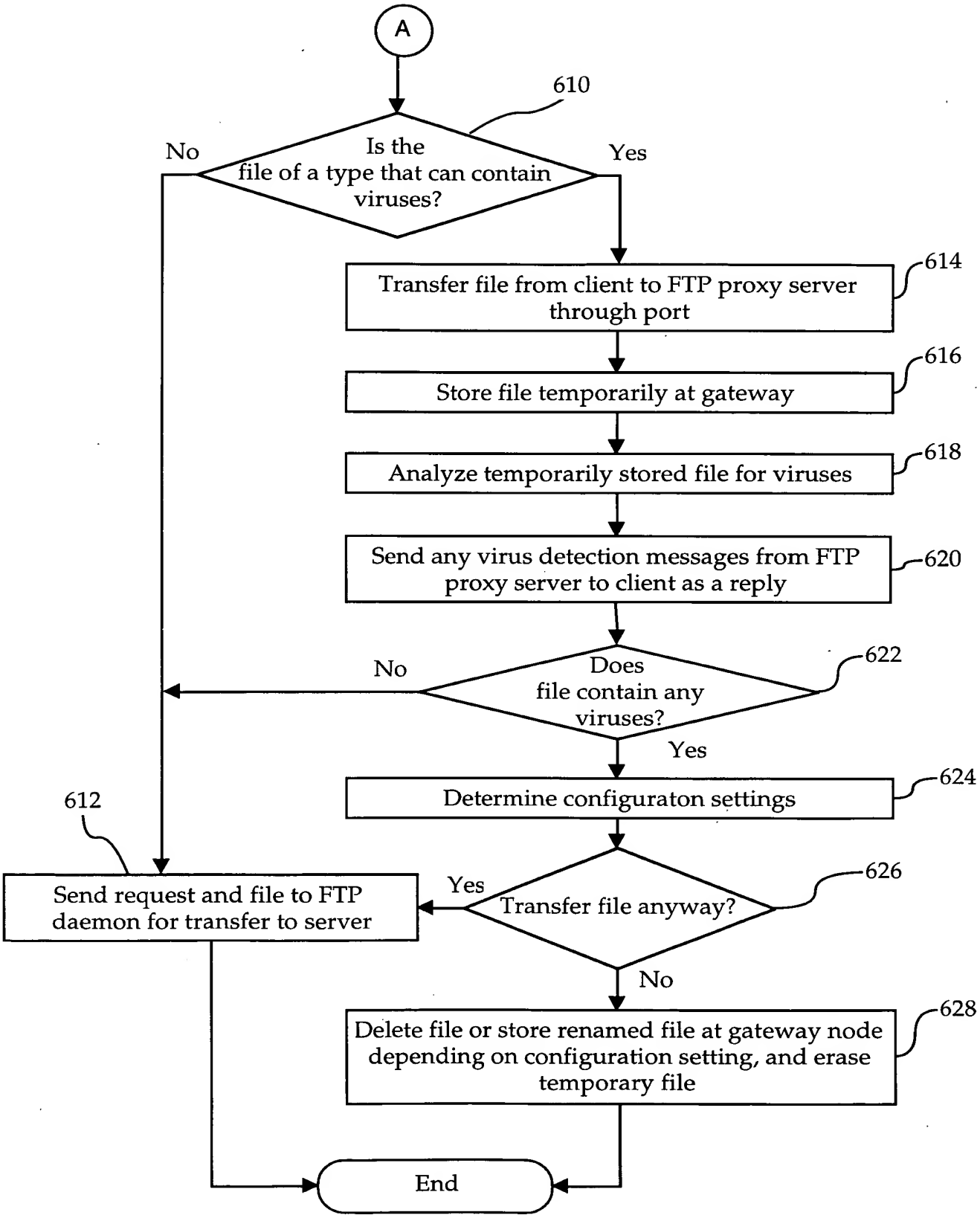
A
610
Is the file of a type that can contain viruses?
No
Yes
614
Transfer file from client to FTP proxy server through port
616
Store file temporarily at gateway
618
Analyze temporarily stored file for viruses
620
Send any virus detection messages from FTP proxy server to client as a reply
622
Does file contain any viruses?
No
Yes
624
Determine configuraton settings
626
Transfer file anyway?
Yes
No
612
Send request and file to FTP daemon for transfer to server
628
Delete file or store renamed file at gateway node depending on configuration setting, and erase temporary file
End

FIG. 6B

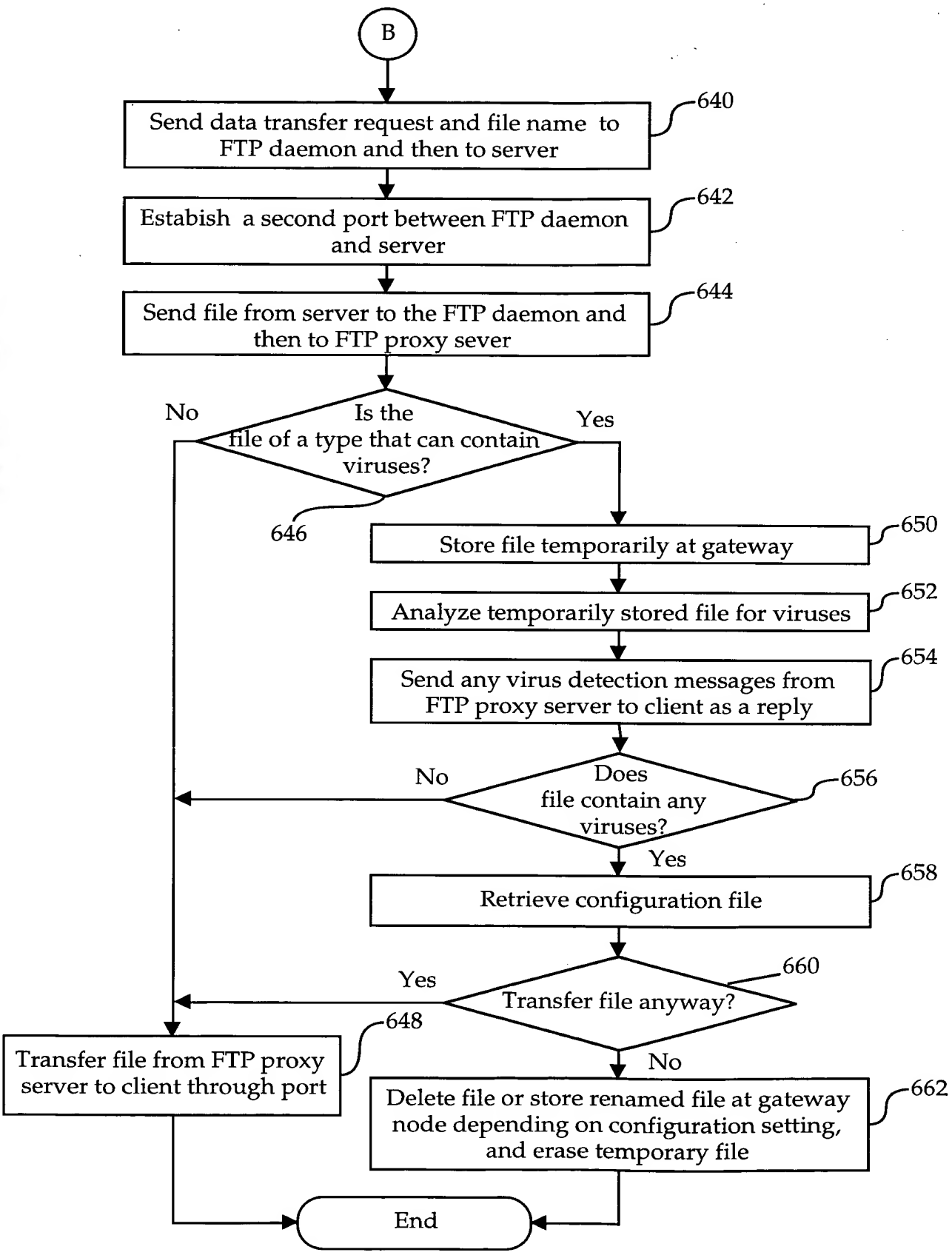
B
Send data transfer request and file name to FTP daemon and then to server
640
Estabish a second port between FTP daemon and server
642
Send file from server to the FTP daemon and then to FTP proxy sever
644
Is the file of a type that can contain viruses?
No
Yes
646
Store file temporarily at gateway
650
Analyze temporarily stored file for viruses
652
Send any virus detection messages from FTP proxy server to client as a reply
654
Does file contain any viruses?
No
656
Yes
Retrieve configuration file
658
Transfer file anyway?
660
Yes
No
Transfer file from FTP proxy server to client through port
648
Delete file or store renamed file at gateway node depending on configuration setting, and erase temporary file
662
End

FIG. 6C

APPROVED BY DRAFTSMAN
O.G. FIG.
CLASS
SUBCLASS

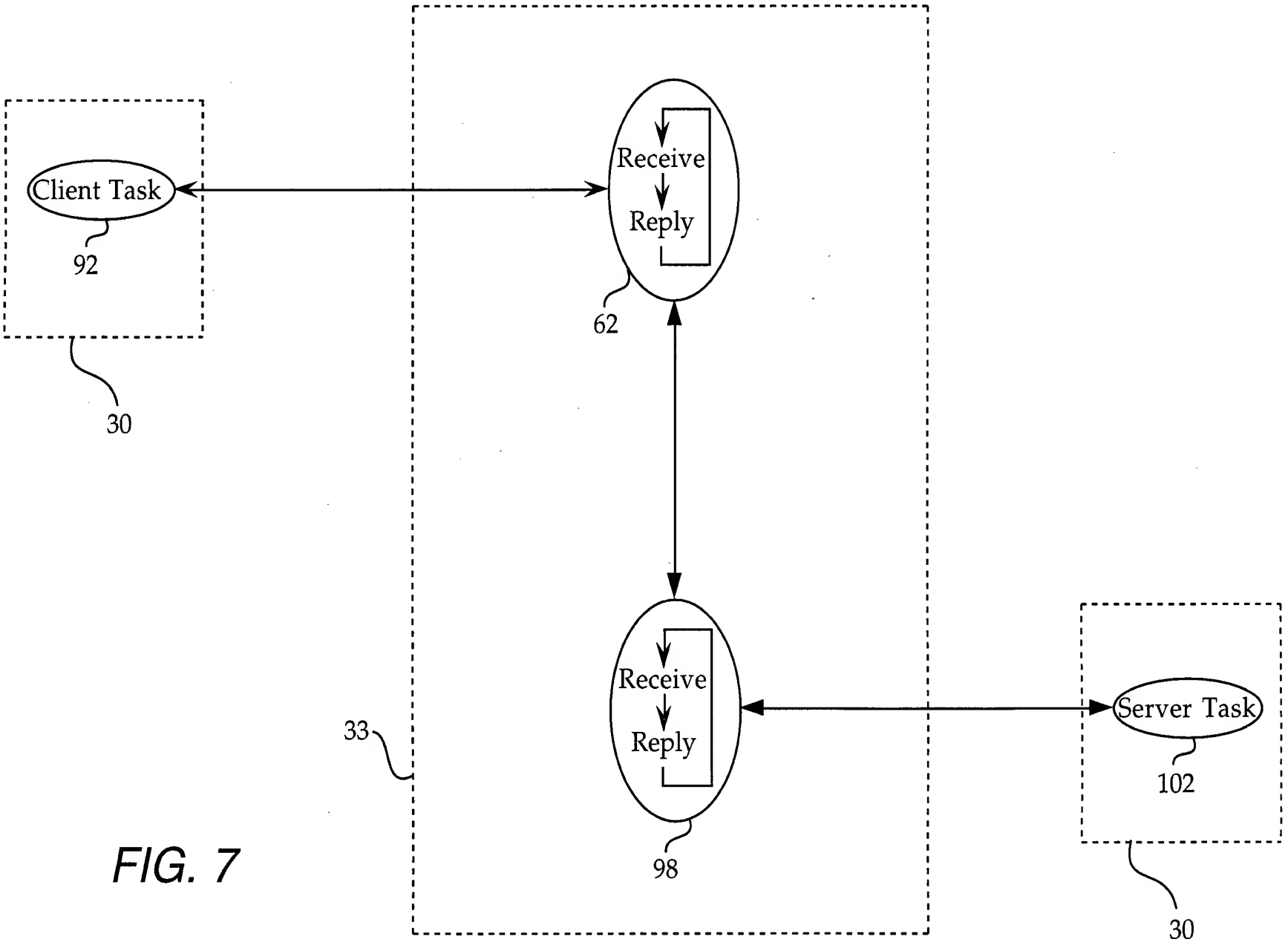

FIG. 7

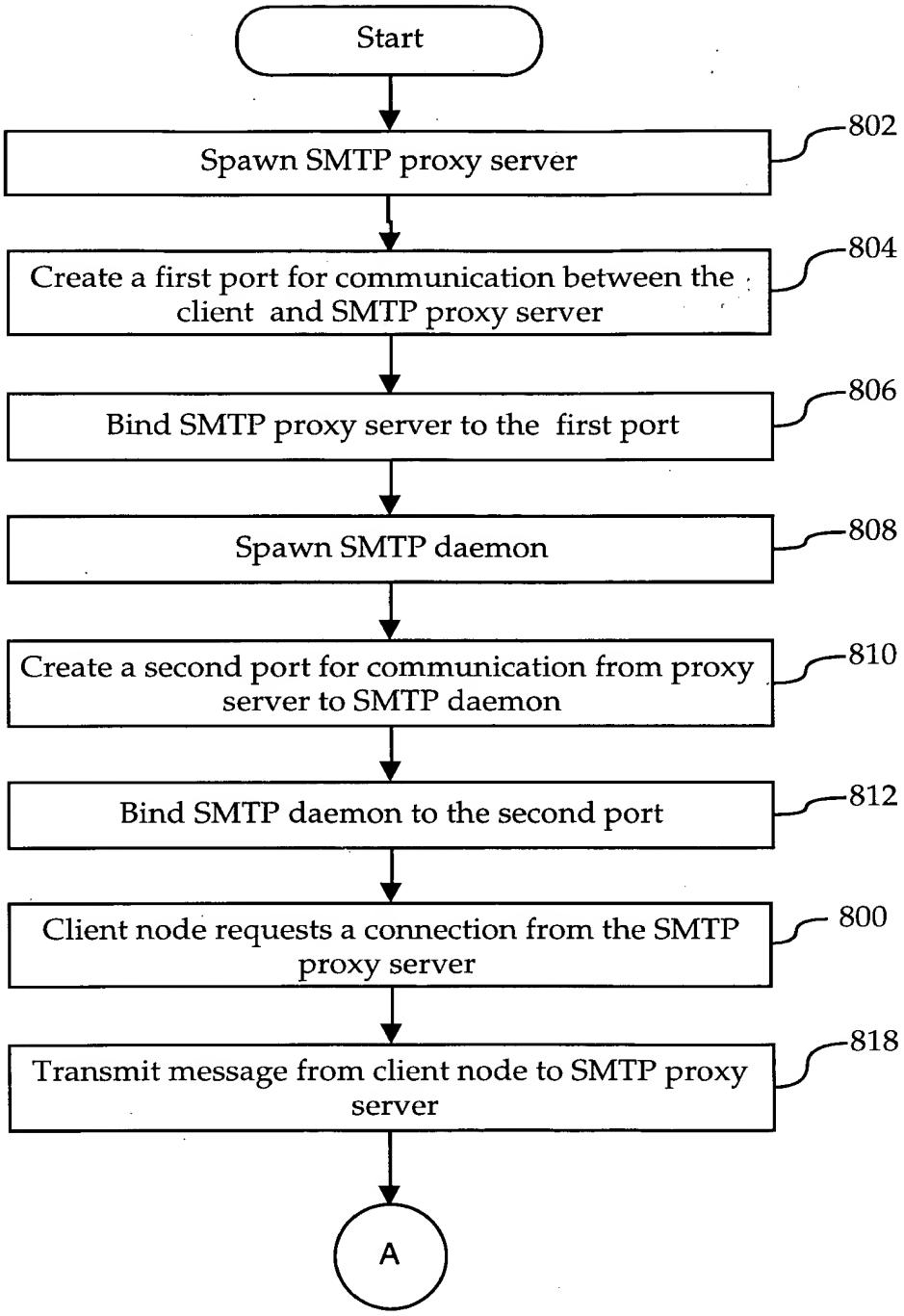
Start
Spawn SMTP proxy server
802
Create a first port for communication between the client and SMTP proxy server
804
Bind SMTP proxy server to the first port
806
Spawn SMTP daemon
808
Create a second port for communication from proxy server to SMTP daemon
810
Bind SMTP daemon to the second port
812
Client node requests a connection from the SMTP proxy server
800
Transmit message from client node to SMTP proxy server
818
A

FIG. 8A

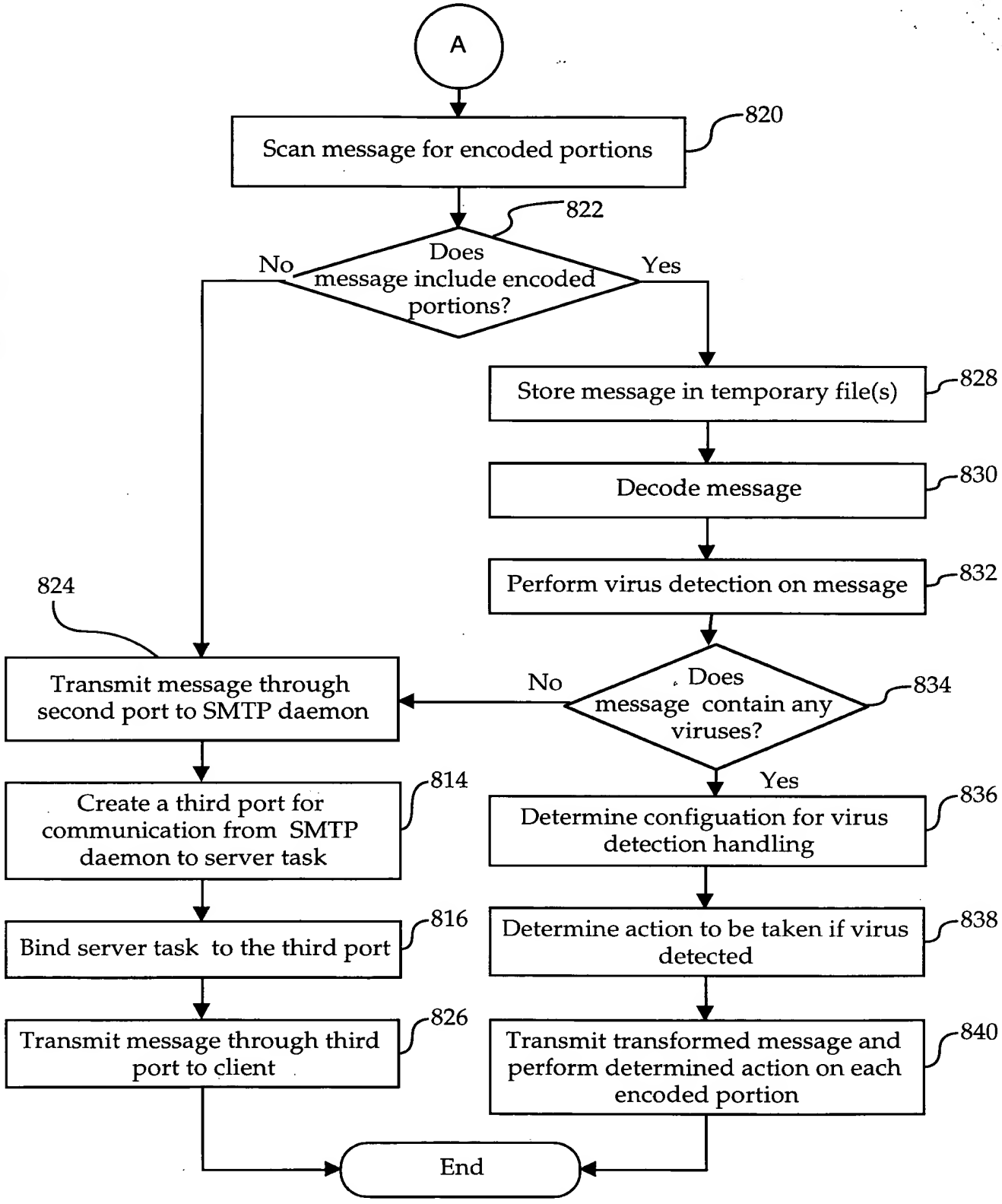
A
Scan message for encoded portions
820
822
Does message include encoded portions?
No
Yes
Store message in temporary file(s)
828
Decode message
830
Perform virus detection on message
832
824
Transmit message through second port to SMTP daemon
No
Does message contain any viruses?
834
Yes
Create a third port for communication from SMTP daemon to server task
814
Determine configuation for virus detection handling
836
Bind server task to the third port
816
Determine action to be taken if virus detected
838
Transmit message through third port to client
826
Transmit transformed message and perform determined action on each encoded portion
840
End

FIG. 8B